



# Environmental Health Activities in Georgia



## NCEH in Partnership with Georgia

The National Center for Environmental Health (NCEH) is part of the Centers for Disease Control and Prevention (CDC). NCEH's work focuses on three program areas: identifying environmental hazards, measuring exposure to environmental chemicals, and preventing health effects that result from environmental hazards. NCEH has approximately 450 employees and a budget for 2004 of approximately \$189 million; its mission is to promote health and quality of life by preventing or controlling diseases and deaths that result from interactions between people and their environment.

NCEH and partners in **Georgia** collaborate on a variety of environmental health projects throughout the state. In **fiscal years 2000–2004**, NCEH awarded more than **\$1.8 million** in direct funds and services to Georgia for various projects. These projects include activities related to addressing asthma, implementing a biomonitoring program, and preventing childhood lead poisoning. In addition, Georgia benefits from national-level prevention and response activities conducted by NCEH or NCEH-funded partners.

### Identifying Environmental Hazards

NCEH identifies, investigates, and tracks environmental hazards and their effects on people's health. Following is an example of such activities that NCEH conducted or supported in **Georgia**.

- **Addressing Asthma from a Public Health Perspective**—NCEH is funding the **Georgia Department of Human Resources** to continue asthma surveillance activities and to partially implement its asthma plan, which was developed through a statewide collaborative effort. Implementation of the statewide comprehensive asthma plan will reduce the burden of asthma in the home, school, and occupational environments through science-based interventions, statewide partnerships, and surveillance. Funding began in fiscal year 2004 and ends in fiscal year 2007.

### Measuring Exposure to Environmental Chemicals

NCEH measures environmental chemicals in people to determine how to protect people and improve their health. Following are examples of such activities that NCEH has conducted or supported in **Georgia**.

#### Funding

- **Antiterrorism Funding to Increase State Chemical Laboratory Capacity**—In fiscal year 2004, CDC provided more than \$1.9 million to **Georgia** to help expand chemical laboratory capacity to prepare for and respond to chemical-terrorism incidents and other chemical emergencies. This expansion will allow full participation of chemical-terrorism response laboratories in the Laboratory Response Network.

In addition, NCEH funds laboratory development and the purchase of state-of-the-art equipment in Georgia's public health laboratories to develop a network of chemical laboratories and transfer technology to measure chemical agents.

- **Biomonitoring Grants**—In fiscal years 2001 and 2002, NCEH awarded planning grants to a biomonitoring consortium in which **Georgia** and South Carolina are members. This funding allowed the consortium to develop a plan to implement a biomonitoring program for these states. In this way, the states could make decisions about which environmental chemicals within their borders were of health concern and could make plans for measuring levels of those chemicals in their populations.

#### Studies

- **Atlanta Red Cross (ARC) Blood Bags and White Particles**—In early 2003, NCEH was contacted about concerns related to white, gelatinous particles in blood bags being used in

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**ARC's Southern Region.** Because of concern about potential health effects of the particles, the NCEH laboratory tested collection bags and units of blood for polyvinyl chloride-related chemicals to determine whether lot-related differences existed in collection bags. Sample bags from the affected lot were compared with control bags with regard to polyvinyl chloride-related chemicals. The results were consistent with normal manufacturing variability. Ultimately, the particles were determined to be clumped platelets resulting from changes in the physical processing of collected blood units.

■ **Painless Glucose Monitoring Using**

**Microneedles**—One of the greatest barriers to improved management of diabetes is the pain and inconvenience associated with blood glucose monitoring and insulin delivery. Discomfort related to lancet-based monitoring methods keeps patients from monitoring glucose as frequently as the American Diabetes Association recommends.

In December 2002, the NCEH laboratory and the **Georgia Institute of Technology in Atlanta** began working together to develop a painless method to obtain glucose measurements. The new method is an inexpensive approach that easily lends itself to frequent, automated measurements. With this method, microfabricated microneedles are used to withdraw interstitial fluid (ISF) from the skin. Microneedles are very small, do not cause pain, and can be worn as a “patch” for extended periods (e.g., hours to days). Since 2002, researchers have constructed single microneedles and microneedle arrays capable of being inserted into skin and withdrawing ISF. Researchers have also developed a method to analyze glucose in ISF using state-of-the-art mass spectrometry. Results from the mass spectrometry method have been compared with results from a handheld glucose monitor, and microneedle ISF glucose measurements have been correlated with blood glucose levels. Researchers are preparing to publish a research paper showing that microneedles are an alternative way to collect specimens for glucose measurements in people with diabetes.

■ **Analysis of Unsatisfactory Guthrie Blood Spot Samples**—All babies born in the United States are screened for as few as 4 and as many as

35 genetic and metabolic diseases and disorders within a few days of birth. The screening process begins with the collection of a few drops of blood from the infant's heel onto a filter paper card. This collection is usually done before discharge from the hospital, within 24 to 48 hours after birth. When the specimen has dried, it is sent to the screening laboratory for testing. Newborn-screening specimens that are collected incorrectly and that may be unsuitable for testing are declared unsatisfactory.

The NCEH laboratory assessed the impact of delays caused by unsatisfactory specimens on the newborn screening process. The laboratory collected data from newborn screening programs in New Mexico and Georgia. In both states, NCEH assessed the amount of time required for each step of the newborn-screening process and estimated the time required for extra steps needed for repeat testing when initial collection results in an unsatisfactory specimen. Using these data, NCEH calculated the age at which babies with satisfactory and unsatisfactory specimens got screening results from valid specimens. The impact of the state screening protocols on the delays caused by unsatisfactory specimens was also analyzed. Published results are expected in 2005 and should help states evaluate their screening protocols.

■ **Investigation of Suspected Poisoning of Georgia Students**—In October 2004, four high-school students in **Glascocock County** became ill after eating cookies brought to school by another student. The ill students and six other students who also ate the cookies were taken to the emergency department at a local hospital, where radiographs revealed possible metal contamination. State health officials contacted the NCEH laboratory, and laboratory staff analyzed the students' blood and urine samples for mercury, arsenic, barium, beryllium, cadmium, cesium, cobalt, lead, molybdenum, platinum, thallium, tungsten, and uranium. The test results showed no significant exposure to these metals.

■ **Lindane and Permethrin Exposure in Schoolchildren**—The NCEH laboratory assessed exposure to lindane and permethrin pesticides in a group of schoolchildren aged 5 to 8 years in **Dawson and Forsyth counties**. Lindane and permethrin are pesticides used to treat head lice.

Lindane is found in prescription drug shampoos; permethrin is found in over-the-counter lice shampoos. No other study has examined the extent of pesticide exposure from lice shampoos. Researchers chose Dawson and Forsyth counties because of high incidences of head lice in county schools. NCEH measured urine samples for metabolites of lindane and permethrin. The results showed little evidence of lindane exposure among the children, but a high prevalence of exposure to pyrethroid pesticides.

## Services

- **Helping State Public Health Laboratories Respond to Chemical Terrorism**—NCEH is working with **Georgia**'s public health laboratory to prepare state laboratory scientists to measure chemical-terrorism agents or their metabolites in people's blood or urine. NCEH is transferring analytic methods for measuring chemical-terrorism agents (including cyanide-based compounds and other chemicals) to Georgia. In addition, NCEH instituted a proficiency-testing program to measure the comparability of the state's analytic results with results from the NCEH laboratory.
- **Newborn Screening Quality Assurance Program**—NCEH provides proficiency-testing services and dried-blood-spot quality-control materials to monitor and help assure the quality of screening program operations for newborns in **Georgia**. Georgia screens newborns for eight diseases or conditions. The importance of accurate screening tests for genetic metabolic diseases cannot be overestimated. Testing of blood spots collected from newborns is mandated by law in almost every state to promote early intervention that can prevent mental retardation, severe illness, and premature death.
- **Lipid Standardization Program (LSP)**—NCEH provides three lipid research laboratories in **Georgia** with accuracy-based standardization support for analytic measurement. These laboratories are involved in one or more ongoing lipid metabolism longitudinal studies or clinical trials that investigate risk factors and complications associated with cardiovascular disease. The LSP, supported by NCEH's Lipid Reference Laboratory, provides quarterly analytic performance challenges and statistical assessment reports that allow program participants to monitor

performance over time to help ensure the accuracy and comparability of study results and findings.

## Preventing Health Effects That Result from Environmental Hazards

NCEH promotes safe environmental public health practices to minimize exposure to environmental hazards and prevent adverse health effects. Following are examples of such activities that NCEH has conducted or supported in **Georgia**.

- **Childhood Lead Poisoning Prevention Program**—The **Georgia Childhood Lead Poisoning Prevention Program (GA CLPPP)** has received NCEH funding since 2000. In 2001, the program screened 32,955 children for lead poisoning; 423 children under 6 years of age had elevated blood lead levels.  
  
GA CLPPP is using NCEH funds to develop, implement, and evaluate a childhood lead poisoning elimination and targeted screening plan. GA CLPPP is also using these funds to ensure case management activities, maintain and enhance its statewide surveillance system, and increase primary prevention activities and strategic partnerships.
- **Environmental Health Specialists Network (EHS-Net)**—EHS-Net is a collaborative project of CDC, eight CDC Emerging Infections Program sites (including **Georgia**), and the U.S. Food and Drug Administration. Members of EHS-Net are gathering information from food-service establishments to learn more about food-handling practices and how they relate to foodborne illness—both what happens to cause foodborne outbreaks and why foodborne outbreaks occur.
- **Center of Excellence in Environmental Health**—In fiscal years 2001–2004, NCEH funded the **Southern Center of Excellence in Environmental Health Practice at Emory University's Rollins School of Public Health**. The center's mission is to protect and promote the environmental health of communities in **Georgia**, South Carolina, and Tennessee. The project provided environmental health training to key personnel from local health departments, enhanced the capacity of a school of public health to address environmental health practice issues, and produced environmental health training materials.

## Resources

NCEH develops materials that public health professionals, medical-care providers, emergency responders, decision makers, and the public can use to identify and track environmental hazards that threaten human health and to prevent or mitigate exposure to those hazards. NCEH's resources cover a range of environmental public health issues. These issues include air pollution and respiratory health (e.g., asthma, carbon monoxide poisoning, and mold exposure), biomonitoring to determine whether selected chemicals in the environment get into people and to what degree, childhood lead poisoning, emergency preparedness for and response to chemicals and radiation, environmental health services, environmental public health tracking, international emergency and refugee health, laboratory sciences as applied to environmental health, radiation studies, safe disposal of chemical weapons, specific health studies, vessel sanitation, and veterans' health.

**For more information about NCEH programs, activities, and publications as well as other resources, contact the NCEH Health Line toll-free at 1-888-232-6789, e-mail [NCEHinfo@cdc.gov](mailto:NCEHinfo@cdc.gov), or visit the NCEH Web site at [www.cdc.gov/nceh](http://www.cdc.gov/nceh).**